NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date:

Region: Wilmington Regional Office
County: New Hanover
NC Facility ID: 6500036
Inspector's Name: Ashby Armistead
Date of Last Inspection: 01/16/2019
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): Duke Energy Progress, LLC - L.V. Sutton Electric Plant

Facility Address:
Duke Energy Progress, LLC - L.V. Sutton Electric Plant
801 Sutton Steam Plant Road
Wilmington, NC 28401

SIC: 4911 / Electric Services
NAICS: 221112 / Fossil Fuel Electric Power Generation

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 02Q .0501(c)(1), 02Q .0402 (acid rain)
NSPS: 02D .0524 NSPS (40 CFR Part 60, Subpart TTTT).
NESHAP: CAA §112(d) MACT Subpart DDDDD transition from CAA §112(j) Case-by-Case MACT
PSD: NA
PSD Avoidance: 02Q .0317
NC Toxics: NA
112(r): NA
Other: CSAPR (Federal-only)

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Kent Tyndall Lead Environmental Professional (910) 341-4775 801 Sutton Steam Plant Road Wilmington, NC 28401	Jason Talbott Station Manager (910) 341-4750 801 Sutton Steam Plant Road Wilmington, NC 28401	Erin Wallace Sr. Environmental Specialist (919) 546-5797 410 South Wilmington Street Raleigh, NC 27601

Application Data

Application Number: 6500036.18C
Date Received: 09/25/2018
Application Type: Renewal
Application Schedule: TV-Renewal

Existing Permit Data
Existing Permit Number: 01318/T33
Existing Permit Issue Date: 12/05/2017
Existing Permit Expiration Date: 06/30/2019

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2017	10.52	622.03	16.73	226.83	167.28	2.77	1.85 [Formaldehyde]
2016	11.58	597.30	6.82	27.84	159.14	2.27	1.50 [Formaldehyde]
2015	24.13	588.75	6.41	50.53	148.46	2.16	1.41 [Formaldehyde]
2014	32.13	639.81	5.82	142.79	134.19	2.00	1.30 [Formaldehyde]
2013	12131.69	4093.08	20.09	124.44	228.68	661.34	611.33 [Hydrogen chloride (hydrochlori]

Review Engineer: Ed Martin

Review Engineer's Signature: **Date:**

DRAFT FOR NOTICE

Comments / Recommendations:
Issue 01318/T34
Permit Issue Date:
Permit Expiration Date:

I. Purpose of Application

This permit application is to renew the existing Title V permit pursuant to 02Q .0513. The renewal application was received on September 25, 2018, at least six months before the permit expiration date of June 30, 2019. Therefore, the application to renew the permit was filed in a timely manner and the application shield pursuant to 15A NCAC 02Q .0512(b)(1) remained in effect. This renewal permit is being issued for another 5-year term and will expire 5 years from the date of issuance. See Section IV below for permit history.

No modifications to the permit were requested by Duke Energy Progress, LLC (Duke) in the renewal application, except for the following administrative permit changes:

1. To add I79, I80 and I81 to the insignificant activities list.
2. To change the heat input rate for auxiliary boiler AB1 from 84.70 million Btu per hour to 85 million Btu per hour to match the nameplate, and similarly to change the heat input rate for natural gas-fired dew point heaters DPH1 and DPH2 from 4.0 million Btu per hour to 2.5 million Btu per hour.

In addition, the permit is being revised for the transition from the CAA §112(j) Case-by-Case MACT for Boilers and Process Heaters to the applicable CAA §112(d) MACT Subpart DDDDD standard (i.e., Boiler MACT) for the natural gas-fired auxiliary boiler AB1 and the natural gas-fired dew point heaters DPH1 and DPH2). The §112(j) MACT requirements for these sources are being replaced with the Subpart DDDDD requirements since the §112(j) requirements no longer apply (see Section V.a. below).

Also, the Cross State Air Pollution Rule (CSAPR) requirements are being added for Turbine 1A and Turbine 1B to replace the Clean Air Interstate Rule (CAIR) requirements which no longer apply and are being removed (see Section V.b. below).

This permit change is a significant modification being made in accordance with 15A NCAC 02Q .0501(d)(1). Public notice of the draft permit is required.

The following applications were consolidated with this application:

Application 6500036.16C (consolidated with Application 6500036.18C)
Duke has submitted a new Acid Rain Permit Application for simple-cycle Fast Start combustion Turbines 3 and 4 which were added to Permit No. 01318T32 on April 18, 2016. The Acid Rain Permit Application, dated May 16, 2016, was received May 23, 2016 in a letter dated "May 19, 2015" [sic] to Brad Newland at the Wilmington Regional Office. This Acid Rain Permit Application had not previously been incorporated into the permit and has now been superseded by the renewal Acid Rain Permit Application with application 6500036.18B received September 25, 2018 (below).

Application 6500036.18A (consolidated with Application 6500036.18C)
This is the Title V Part II operating permit application for the Fast Start project which added two simple-cycle turbines (Turbines 3 and 4, which Duke is now requesting be identified as Turbines 4 and 5) and two Black Start diesel engines (BS1 and BS2). This application was received on March 26, 2018. Duke is requesting the following permit changes:

1. To change the ID Nos. from Turbines 3 and 4 to Turbines 4 and 5.

2. To request language be added to the permit to reflect the intent of NCDAQ's guidance regarding the NSPS Subpart KKKK performance testing for Turbines 4 and 5 which was repeated upon return of the original components which had been removed and returned to the manufacturer for rework at the time the initial test was done when operating with the leased components in place. This also applies to future component swaps with leased parts (see Section V.c).

3. To request that the potential emissions for Black Start engines BS1 and BS2 be subtracted from the previous PSD avoidance limits in condition 2.2.B.1.a of the permit and that the limits be revised accordingly to only apply to the four combustion turbines (see Section V.d below).

4. To add NSPS Subpart TTTT - "Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units" for Turbines 3 and 4 (now Turbines 4 and 5). Subpart TTTT establishes emission standards for new stationary combustion turbines for the control of greenhouse gases (see Section V.e. below).

5. <u>To add a natural gas-fired heater to the insignificant activity list</u>
Duke is requesting that one 1.25 million Btu per hour gas-fired process heater, for use at a new natural gas metering and regulating station for the two Fast Start Turbines, be added to the insignificant activities list. Emission calculations for this heater are presented in Attachment 4 of the application showing this source qualifies as an insignificant activity under 02Q .0503(8).

   This heater is subject to 40 CFR Part 63 Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (Boiler MACT). The initial notification and notification of compliance status have been submitted, and the first required tune-up will be performed in 2022. Subsequent tune-ups will be conducted every 61 months thereafter.

<u>Application 6500036.18B (consolidated with Application 6500036.18C)</u>
Duke has submitted a renewal Acid Rain Permit Application to include simple-cycle Fast Start combustion Turbines 4 and 5 and combined-cycle combustion Turbines 1A and 1B. The revised Acid Rain Application, dated September 13, 2018, was received September 25, 2018 in a letter dated September 15, 2018 to Brad Newland at the Wilmington Regional Office. This Acid Rain Permit Application supersedes the application in application 6500036.16C (above) (see Section V.f. below).

This permit change is a significant modification being made in accordance with 15A NCAC 02Q .0501(c)(1). Public notice of the draft permit is required at this time.

II. Permit Changes

The following changes were made to the Duke Energy Progress, LLC – L.V. Sutton Electric Plant Air Permit No. 01318T33:

Old Page	Old Section	New Page	New Section	Description of Changes
Cover				Amended permit numbers and dates.
Insignificant Activities List				Added I79, I80 and I81.
TOC				Removed Section 2.4 - Clean Air Interstate Rules (CAIR) Permit Requirements. Revised the Acid Rain Permit Application date. Removed the CAIR Application attachment.

Old Page	Old Section	New Page	New Section	Description of Changes
3-4	1, table of permitted emission sources	3-4	1, table of permitted emission sources	Changed the heat input rate for AB1 from 84.70 million Btu per hour to 85 million Btu per hour. Changed the heat input rate for DPH1 and DPH2 from 4.0 million Btu per hour to 2.5 million Btu per hour. Replaced "02D .1109 Case-by-Case MACT" identifier for source ID Nos. AB1, DPH1 and DPH2 with "MACT DDDDD." Changed ID numbers for Turbine 3 and Turbine 4 to Turbine 4 and Turbine 5, respectively. Added "NSPS TTTT" identifier for Turbines 4 and 5. Removed footnote ***.
5	2.1.A, regulation table	5	2.1.A, regulation table	Removed CAIR permit requirements. Added Cross State Air Pollution Rule requirements.
--	--	8	2.1.A.5	Added Cross State Air Pollution Rule requirements.
9	2.1.B, regulation table	8	2.1.B, regulation table	Replaced 15A NCAC 02D .1109 MACT CAA § 112(j) with 15A NCAC 02D .1111 (40 CFR Part 63, Subpart DDDDD).
10	2.1.B.5	10-12	2.1.B.5	Replaced the 15A NCAC 02D .1109 MACT CAA § 112(j) condition with the 15A NCAC 02D .1111 (40 CFR Part 63, Subpart DDDDD) condition.
11	2.1.C, regulation table	13	2.1.C, regulation table	Replaced 15A NCAC 02D .1109 MACT CAA § 112(j) with 15A NCAC 02D .1111 (40 CFR Part 63, Subpart DDDDD).
12	2.1.C.4	14-16	2.1.C.4	Replaced the 15A NCAC 02D .1109 MACT CAA § 112(j) condition with the 15A NCAC 02D .1111 (40 CFR Part 63, Subpart DDDDD) condition.
16	2.1.F	19	2.1.F	Changed ID numbers for Turbine 3 and Turbine 4 to Turbine 4 and Turbine 5, respectively. Removed the statement that the condition is not shielded and the requirement to notify the Regional Supervisor within 15 days after start-up.
16	2.1.F, regulation table	19	2.1.F, regulation table	Added 15A NCAC 02D .0524 NSPS (40 CFR Part 60, Subpart TTTT).
16	2.1.F.1.b	19	2.1.F.1.b	Added noncompliance statement.
--	--	20-21	2.1.F.2.d.ii	Added condition for repeat performance testing for swapped turbine components.
17	2.1.F.2.d	21	2.1.F.2.d	Added noncompliance statement.
--	--	21	2.1.F.2.h	Added noncompliance statement.
19	2.1.F.4	--	--	Removed CAIR condition.

Old Page	Old Section	New Page	New Section	Description of Changes
19	2.1.F.5	--	--	Removed requirement to submit an acid rain application.
19	2.1.F.6	--	--	Removed requirement to submit a Title V permit (Part II) application.
--	--	23	2.1.F.4	Added condition for 15A NCAC 02D .0524 NSPS (40 CFR Part 60, Subpart TTTT).
20	2.1.G	24	2.1.G	Removed the statement that the condition is not shielded and the requirement to notify the Regional Supervisor within 15 days after start-up.
20	2.1.G, regulation table	24	2.1.G, regulation table	Removed 15A NCAC 02Q .0317(a)(1) (PSD avoidance).
20	2.1.G.1.b	24	2.1.G.1.b	Added noncompliance statement.
21	2.1.G.2.b	24-25	2.1.G.2.b	Added noncompliance statement.
--	--	26	2.1.G.3.k	Added noncompliance statement.
22	2.1.G.5	--	--	Removed requirement to submit a Title V permit (Part II) application.
24-30	2.2.B.1.a	28-34	2.2.B.1.a	Updated with new PSD avoidance limits.
30	2.3.D	34	2.3.D	Revised the Acid Rain Permit Application date.
30-32	2.4	--	--	Removed CAIR requirements.
32-41	3.0	34-43	3.0	Updated general conditions to version 5.3, 08/21/2018.
--	List of Acronyms	--	List of Acronyms	Corrected definition of AOS to Alternative Operating Scenario. Added CSAPR - Cross State Air Pollution Rule.

III. Facility Description

Duke's L. V. Sutton Electric Plant is an electric utility facility that generates electrical power using internal combustion turbines. The main emission sources are a 2x2x1 power block consisting of two natural gas/No. 2 fuel oil-fired simple/combined-cycle internal combustion turbines (Turbine 1A and Turbine 1B), two heat recovery steam generators (HRSGs) and one steam turbine with a total nominal generating capacity of 620 MW, which began commercial operation on November 27, 2013. Other sources include two Fast Start simple-cycle turbines rated at up to 65.6 MW output each (Turbines 4 and 5, which were previously Turbines 3 and 4) and two 1,000 kW Black Start diesel engines (BS1 and BS2) permitted April 18, 2016 in permit T32. Other ancillary operations at the site consist of an auxiliary boiler, dew point heaters, wet surface air cooler, turbine inlet chiller and diesel-fired firewater pump engine.

IV. Permit History

The following permit changes have been made since the previous Title V permit renewal (T30):

Permit No.	Issue Date	Type of Modification	Purpose of Permit
01318T30	07/16/2014	Renewal	Renewal of Title V permit (including renewal of acid rain and CAIR permits) with alternate monitoring for the CEMS used for compliance with the PSD avoidance limit for CO and removal of equipment associated with the retired coal-fired boilers.
01318T31	03/29/2016	Administrative amendment	Name change from Duke Energy Progress – L.V. Sutton Electric Plant to Duke Energy Progress, LLC – L.V. Sutton Electric Plant
01318T32	04/18/2016	TV-Sign-501(c)(2) Part I	To install two new Fast Start simple cycle turbines (Turbines 3 and 4) and two new Black Start engines (BS1 and BS2).
01318T33	12/05/2017	TV- State Only	To add the facility-wide toxics requirements as a result of the two Fast Start simple cycle turbines and two Black Start engines permitted in T32.
01318T34	tbd	Renewal	Renewal of Title V permit including: renewal of acid rain requirements, addition of CSAPR, removal of CAIR, TV Part II for Fast Start equipment, addition of DAQ's guidance for engine swaps, addition of NSPS Subpart TTTT, revised PSD avoidance limits, and transition from 112(j) to Boiler MACT 5D.

V. Emissions and Regulatory Analysis

The following permit changes are being made:

a. Transition from 112(j) Case-by-Case MACT to Subpart DDDDD MACT

The permit is being revised to replace the CAA §112(j) Case-by-Case MACT for Boilers and Process Heaters under 15A NCAC 02D .1109 to the applicable CAA §112(d) MACT Subpart DDDDD standard for ''National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters," for the natural gas-fired auxiliary boiler AB1 (in Section 2.1.B of the permit) and natural gas-fired dew point heaters DPH1 and DPH2 (in Section 2.1.C of the permit). The facility is subject to Subpart DDDDD beginning on May 20, 2019, which is after the issuance date of this permit and therefore §112(j) will no longer apply.

As specified in Subpart DDDDD §63.7485, this subpart applies to owners or operators of industrial, commercial, or institutional boilers or process heaters as defined in §63.7575 that is located at, or is part of, a major source of HAP (as defined in §63.2), except as specified in §63.7491. This subpart applies to new, reconstructed, and existing affected sources as follows:

> The affected source of this subpart is the collection at a major source of all existing industrial, commercial, and institutional boilers and process heaters within a subcategory as defined in §63.7575.
>
> The affected source of this subpart is each new or reconstructed industrial, commercial, or institutional boiler or process heater, as defined in §63.7575, located at a major source.

A boiler or process heater is new if construction is commenced after June 4, 2010. A boiler or process heater is existing if it is not new or reconstructed. The Sutton auxiliary boiler and dew point heaters are new sources under Subpart DDDDD, which were added to permit T25 in December 30, 2010.

The auxiliary boiler and dew point heaters will burn only natural gas and therefore are classified as *Unit designed to burn gas 1 subcategory* as listed in §63.7499(l). Since these sources are new units designed to burn gas 1 fuels, they are not subject to any emissions limitations, operation limitations or the startup/shutdown work practice standards.

The requirements under MACT Subpart DDDDD are being added at this time in accordance with 40 CFR §63.56(b), which states "if the Administrator promulgates a relevant emission standard under section 112(d) or (h) of the Act that is applicable to a source after the date a permit is issued pursuant to §63.52 or §63.54, the permitting authority must incorporate requirements of that standard in the title V permit upon its next renewal."

The DAQ must establish a date when facilities with Case-by-Case MACT standards must comply with the promulgated Subpart DDDDD standard. The date must not be "longer than 8 years after such standard is promulgated or 8 years after the date by which the owner or operator was first required to comply with the emission limitation established by the permit, whichever is earlier." The then-current version of 40 CFR Part 63 Subpart DDDDD was promulgated on March 21, 2011, with an effective date of May 20, 2011 (76 FR 15662). The DAQ has established that all facilities subject to the §112(j) Case-by-Case MACT for boilers must be in compliance with Subpart DDDDD by eight years after the effective date of that rule. Therefore, Duke must comply with the MACT Subpart DDDDD standards for these sources beginning May 20, 2019.

The following is a summary of the requirements for these sources under MACT Subpart DDDDD:

Notifications

- The Permittee shall submit an initial Notification of Compliance Status. The notification must be signed by a responsible official and sent before the close of business on the 60th day following the completion of the initial tune-up. The notification shall contain the following:
  i. A description of the affected unit(s) including identification of which subcategories the unit is in, the design heat input capacity of the unit, and description of the fuel(s) burned.
  ii. The following certification of compliance:
  "This facility completed the required initial tune-up for all of the boilers and process heaters covered by 40 CFR 63 Subpart DDDDD at the site according to the procedures in.§63.7540(a)(10)(i) through (vi)."

Compliance Requirements and Work Practice Standards

- At all times the affected unit(s) is operating, except during periods of startup and shutdown, the Permittee shall operate and maintain any affected source (as defined in §63.7490), including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions.
- The Permittee shall conduct a tune-up of the natural gas-fired auxiliary boiler AB1 annually and a tune-up of the two natural gas-fired dew point heaters DPH1 and DPH2 every 5 years as specified below (in accordance with Table 3 of 40 CFR Part 63 Subpart DDDDD):
  i. As applicable, inspect the burner, and clean or replace any components of the burner as necessary.
  ii. Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern.
  iii. Inspect the system controlling the air-to-fuel ratio, as applicable, and ensure that it is correctly calibrated and functioning properly;
  iv. Optimize total emissions of carbon monoxide. and
  v. Measure the concentrations in the effluent stream of carbon monoxide in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made.
- Each annual tune-up for the auxiliary boiler shall be conducted no more than 13 months after the previous tune-up and each 5-year tune-up for the two dew point heaters shall be conducted no

more than 61 months after the previous tune-up. The initial tune-up for the auxiliary boiler under this rule shall be conducted no later than 13 months after the previous tune-up required under the previously applicable CAA §112(j) standard and the initial tune-up for the two dew point heaters under this rule shall be conducted no later than 61 months after the previous tune-up required under the previously applicable CAA §112(j) standard.

- If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup.

Recordkeeping Requirements

The Permittee shall keep a copy of each notification and report submitted to comply with Subpart DDDDD, including all documentation supporting any Initial Notification or Notification of Compliance Status, or compliance report that has been submitted.

- The Permittee shall maintain on-site and submit, if requested by the Administrator, an annual report for the auxiliary boiler and a report compiled every 5 years for the two dew point heaters containing the information in paragraphs i through iii below:
  i. The concentrations of carbon monoxide in the effluent stream in parts per million by volume, and oxygen in volume percent, measured at high fire or typical operating load, before and after the tune-up of the boiler or process heater;
  ii. A description of any corrective actions taken as a part of the tune-up; and
  iii. The type and amount of fuel used over the 12 months prior to the tune-up, but only if the unit was physically and legally capable of using more than one type of fuel during that period.
- The Permittee shall maintain records for five years, with at least two years onsite, for each notification and report required to comply with Subpart DDDDD.

Reporting Requirements

- The Permittee shall submit compliance reports, including deviations from work practice standard, if applicable, on an annual basis for the natural gas-fired auxiliary boiler AB1 and on a 5-year basis for the two natural gas-fired dew point heaters DPH1 and DPH2.

b. Addition of CSAPR

The CAIR requirements no longer apply as of January 1, 2015 and are being removed to be replaced with the CSAPR requirements for Turbine 1A and Turbine 1B.

CAIR was designed to address interstate transport of ozone and fine particulate matter ($PM_{2.5}$) pollution. CAIR required certain states to limit annual emissions of nitrogen oxides (NOx) and sulfur dioxide (SO_2), which contribute to the formation of ozone and $PM_{2.5}$. It also required certain states to limit ozone season NOx emissions which contribute to the formation of ozone during the summer ozone season. CAIR developed three separate cap and trade programs to achieve the required reductions for total annual NOx, NOx during the ozone season, and annual SO_2 and includes the compliance, emissions measurements recording and reporting, excess emissions and liability requirements.

CSAPR Requirements

The CSAPR replaced EPA's 2005 CAIR, following the direction of a 2008 court decision that required EPA to issue a replacement regulation. CSAPR implementation began on January 1, 2015.

This rule requires facilities in 27 states in the eastern half of the U.S. to improve air quality by reducing emissions of SO_2 and NOx from power plants that react in the atmosphere and contribute to the formation of fine particle pollution from upwind states that crosses state lines and contributes to smog and soot pollution in downwind states in order to help downwind areas attain fine particle and/or ozone NAAQS.

CSAPR applies to any stationary fossil fuel-fired boiler or combustion turbine serving at any time on or after January 1, 2005, a generator with nameplate capacity exceeding 25 MW producing electricity for sale. EPA sets a pollution emission budget limit for each of the states covered by CSAPR and allowances are allocated to affected sources.

This rule and all requirements thereof are Federal-enforceable only. Compliance will be determined by the US EPA.

For the two combustion turbines (ID Nos. Turbine 1A and Turbine 1B), the Permittee shall comply with all applicable requirements of 40 CFR Part 97, Subpart AAAAA "TR NOx Annual Trading Program" and Subpart CCCCC "TR SO_2 Group 1 Trading Program". North Carolina is not subject to Subpart BBBBB "CSAPR NOx Ozone Season Trading Program."

c. Clarification language regarding swapped turbine components

Turbines 4 and 5 are General Electric Model LM6000 combustion turbines which are designed to allow portions of the engine (i.e., turbine) to be swapped out (replaced temporarily) with leased components to allow for maintenance to be performed while the unit can continue to be operational. In a letter, dated June 13, 2017, GE states it offers a GE Lease Engine Program for this model turbine to provide replacement gas turbines to operate in the customer's units while the customer's gas turbines are undergoing repairs. Further, GE states that the Lease Engine Gas Turbines are of the same design as the customer's units and are fully interchangeable in form, fit and function; and that operating characteristics are identical to the removed customer gas turbine.

The turbines are subject to the New Source Performance Standard for Stationary Combustion Turbines, 40 CFR 60 Subpart KKKK. Upon completion of construction, parts of the turbine were removed to be worked on by the manufacturer. The initial performance testing was conducted on the turbines when leased engine parts were in use.

Duke had submitted an applicability determination request via email to William Willets on June 15, 2017 to request guidance from NCDAQ regarding the treatment of the turbines any time engine parts are swapped for maintenance purposes, including concurrence that the existing permit allowed for the turbine parts swaps. William Willets responded to Erin Wallace at Duke on June 16, 2017 that the proposal to treat the leased units in accordance with the permitted requirements is both acceptable and appropriate. Erin Wallace followed up on July 13, 2017 with Duke's understanding of the NSPS construction notification, startup notification, and NOx performance testing using the existing certified CEMS that would be required upon return of the original turbine parts. Then in an email to Erin Wallace, dated July 18, 2017, William Willets agreed with Duke's July 13, 2017 assessment of the NSPS requirements, including that when engine swaps occur, the NSPS initial performance testing will be repeated upon return of the original engine parts to demonstrate that the turbine remains in compliance with the Subpart KKKK NOx permit limits. Based on this above guidance, Duke is proposing to conduct the performance test within 60 days of the original engine being installed and will notify the Wilmington Regional Office when the parts are returned to the plant, reinstalled and fired.

Duke is requesting that this language be added to the permit to reflect the intent of NCDAQ's guidance that the performance testing be repeated upon return of the original engine parts.

The following requirements are being placed at permit condition 2.1.F.2.d.ii for the performance testing:

Performance testing when original components are replaced with leased components

When original components of the turbine(s) are replaced with leased components from the manufacturer to allow for maintenance, the Permittee shall demonstrate compliance with the NOx emission limits by conducting a performance test while firing the primary fuel within 60 days after achieving the peak load after re-installation of the original components, using the existing certified NOx CEMS.

The Permittee shall submit the following notifications when leased components are used:

1. The date of first startup when operating with the leased components postmarked no later than 30 days after such date.

2. The date the original components are re-installed postmarked no later than 30 days after such date.
3. The date of first startup after re-installation of the original components postmarked within 15 days after such date.

If operation with the leased components in operation exceeds 60 days, the Permittee shall demonstrate compliance with the NOx emission limits by conducting a performance test within 60 days after achieving the peak load after installation of the leased components, in accordance with Section 2.1.F.2.d.i above, using the existing certified NOx CEMS.

d. PSD avoidance limit changes

Permit condition 2.2.B.l.a provides emission limitations to avoid the applicability of 15A NCAC 02D .0530(g). These limits apply to sources Turbine 1A, Turbine 1B, Turbine 3, Turbine 4, BS1, and BS2. Currently, the four turbines track emissions using the data acquisition and handling system (DAHS). Emissions from the two Black Start diesel engines BS1 and BS2 are manually calculated then combined with the turbine emissions for comparison to the limits. To simplify this tracking and reporting, Duke is requesting that the potential emissions for the two engines BS1 and BS2 be subtracted from the previous PSD avoidance limits and that the permit limits in condition 2.2.B.1.a be revised accordingly to only apply to the four combustion turbines.

Table 1 shows the potential emissions from the two Black Start engines BS1 and BS2 which are subtracted from the current PSD avoidance limits to get the new PSD avoidance limits. The current limits are taken from the review for permit T27 (which were revised from the original limits in permit T25 when the PSD avoidance condition was established) and the potential emissions from BS1 and BS2 are taken from the review for permit T32 when these engines were first permitted.

Table 1 – New PSD Avoidance Limits

Regulated Pollutant	Current Limit (tpy)	BS1+BS2 PTE (tpy)	New PSD Avoidance Limit (tpy)
nitrogen oxides	5,591.02	7.05	5,583.97
sulfur dioxide	20,862.36	1.36	20,861.00
particulate matter	1,145.08	0.22	1,144.86
PM-10	835.21	0.22	834.99
PM-2.5	453.28	0.22	453.06
carbon monoxide	675.85	3.86	671.99
VOCs	76.44	1.69	74.75
sulfuric acid	44.96	--	44.96
lead	0.88	--	0.88

e. NSPS Subpart TTTT - "Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units"

As specified in §60.5509(a) of this subpart, except as provided for in §60.5509(b), the GHG standards included in this subpart apply to any steam generating unit, IGCC, or stationary combustion turbine; all of which are designated as electric generating units (EGUs); that commenced construction after January 8, 2014 or commenced reconstruction after June 18, 2014 that meets the applicability conditions in paragraphs (a)(1) and (a)(2) of this section as follows:

(a)(1) Has a base load rating greater than 250 mmBtu/hr of fossil fuel (either alone or in combination with any other fuel); and

(a)(2) Serves a generator or generators capable of selling greater than 25 MW of electricity to a utility power distribution system.

As the two Fast Start turbines 4 and 5 (previously turbines 3 and 4) were first permitted on April 18, 2016 in T32, and each have a base load rating greater than 250 mmBtu/hr of fossil fuel and serve generators capable of selling greater than 25 MW of electricity, these units are subject to this regulation.

In accordance with §60.5520(a), for each affected EGU subject to this subpart, the affected EGU must not discharge any gases that contain CO_2 in excess of the applicable CO_2 emission standard specified in Table 1 (applies to steam generating units and integrated gasification combined cycle facilities) or Table 2 (applies to stationary combustion turbines) of this subpart, consistent with paragraphs (b), (c), and (d) of §60.5520, as applicable.

In §60.5520(d), stationary combustion turbines are subject to a heat input-based standard in Table 2 of this subpart that are only permitted to burn one or more uniform fuels, as described in §60.5520(d)(1), are only subject to the monitoring requirements in §60.5520(d)(1) as follows:

> Stationary combustion turbines that are only permitted to burn fuels with a consistent chemical composition (*i.e.*, uniform fuels) that result in a consistent emission rate of 160 lb CO_2/mmBtu or less are not subject to any monitoring or reporting requirements under this subpart. These fuels include, but are not limited to, natural gas, methane, butane, butylene, ethane, ethylene, propane, naphtha, propylene, jet fuel kerosene, No. 1 fuel oil, No. 2 fuel oil, and biodiesel. Stationary combustion turbines qualifying under this paragraph are only required to maintain purchase records for permitted fuels.

Turbines 4 and 5 are permitted to bum either natural gas or No. 2 fuel oil, both of which are classified as uniform fuels. Therefore, per §60.5520(d)(l), the turbines are not subject to any monitoring or reporting requirements under subpart TTTT, and are only required to maintain purchase records for the permitted fuels.

Turbines 4 and 5 are subject to the CO_2 emission standards specified in Table 2 of the subpart as follows:

> Newly constructed or reconstructed stationary combustion turbine that supplies its design efficiency or 50 percent, whichever is less, times its potential electric output or less as net-electric sales on either a 12-operating month or a 3-year rolling average basis and combusts more than 90% natural gas on a heat input basis on a 12-operating-month rolling average basis.

Based on correspondence from the manufacturer, the design efficiency (electric plus useful thermal output) is 39.5 and 39 percent for Units 4 and 5, and the potential electrical output is 372, 075 MWh/12 months and 384,383 MWh/12 months, respectively. Therefore, the turbines qualify under §60. 5520(d)(1) as follows:

> Unit 4: 39.5% * 372,075 MWh/12-month Potential Electrical Output = 146,969 MWh/year
> Unit 5: 39% * 384,383 MWh/12-month Potential Electrical Output = 149,909 MWh/year

Duke Energy will maintain records of the electrical output on an annual basis for each turbine.

The following is a summary of the requirements for these sources under MACT Subpart TTTT:

Notifications

- The Permittee shall submit the following notifications:
  i. A notification of the date construction of the affected facility is commenced postmarked no later than 30 days after such date.

ii. A notification of the actual date of initial startup of the affected facility postmarked within 15 days after such date.
iii. Notifications specified in §75.61 as applicable.

Emission Limitations

- The Permittee shall not discharge from the affected EGU any gases that contain CO_2 in excess of 120 lb CO_2/million Btu of heat input.

Recordkeeping Requirements

- The Permittee shall keep purchase records of natural gas and No. 2 fuel oil.
- The Permittee shall follow the applicable recordkeeping requirements and maintain records as required under 40 CFR 75 Subpart F.
- The Permittee shall keep records as follows:
  i. Records shall be in a form suitable and readily available for expeditious review.
  ii. Each record shall be maintained for 3 years after the date of conclusion of each compliance period.
  iii. Each record shall be maintained on site for at least 2 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to §60.7.

f. Acid Rain Changes (Section 2.3 of permit)

Duke submitted a renewal Acid Rain Permit Application, received September 25, 2018 (application 6500036.18B), to include the combined-cycle combustion Turbines 1A and 1B, which were in the previous permit T33, and the simple-cycle Fast Start combustion Turbines 4 and 5, which are now being added in Section 2.3 of the permit.

The effective dates of the acid rain portion of the permit are the same as the Title V permit itself. The Acid Rain Permit Application dated September 13, 2018 will become part of the Title V permit (as an attachment).

The applicable acid rain rules for the turbines, as specified in the Acid Rain Permit Application includes the following emission and monitoring requirements:

15A NCAC 02Q .0402 "Acid Rain Procedures" (40 CFR Part 72 "Permits Regulation")

North Carolina air quality regulation 15A NCAC 02Q .0400 implements Phase II of the federal acid rain program pursuant to Title IV of the CAA as provided in 40 CFR Part 72. Issuance or denial of acid rain permits shall follow the procedures under 40 CFR Part 70 (Title V) and Part 72. If the provisions or requirements of Part 72 conflict with or are not included in Part 70, the Part 72 provisions and requirements shall apply and take precedence. SO_2 allowances are not allocated by U.S. EPA for new units under 40 CFR Part 72; however, the sources must hold enough SO_2 allowances to cover their annual SO_2 emissions. There are no NOx emission limits for gas or oil-fired units; however, NOx emissions monitoring is required.

15A NCAC 02Q .0402 "Acid Rain Procedures" (40 CFR Part 75 "Continuous Emissions Monitoring")

This regulation establishes requirements for the installation, certification, operation, and maintenance of continuous emissions or opacity monitoring systems.

VI. Public Notice and EPA Review of the Draft Permit

Pursuant to 15A NCAC 02Q .0521, a notice of the draft Title V Operating Permit will be published on the DAQ website, to provide for a 30-day comment period with an opportunity for a public hearing. Copies of the draft (proposed) permit, review and public notice were sent to EPA for their 45-day review, to persons on the Title V mailing list, to the Wilmington Regional Office, and to the Permittee for review.

VII. Other Requirements

PE Seal

Not required since no new control devices are being added.

Zoning
There is no expansion of the facility, therefore zoning consistency is not required.

Fee Classification
The facility fee classification after this modification will remain as "Title V" as before.

VIII. Recommendations

After public notice.